Synco™ 700

Universal Controllers RMU7..B

- With yearly timeswitch
- Each type of controller is supplied with 5 different ventilation/air conditioning plants preprogrammed
- Freely configurable controller, for optimum adaptation to the relevant type of plant
- Modular expandable with option modules RMZ785, RMZ787 and RMZ788
- Menu-driven operation with separate operator unit (plug-in type or detached)
- Konnex bus connection for operation and process information

Use

For use on basic to complex ventilation, air conditioning and chilled water plants.
The universal controllers are designed to handle the following controlled variables: Temperature, relative/absolute humidity, pressure/differential pressure, airflow, indoor air quality and enthalpy.

Functions

Timeswitch and operating modes

- Yearly timeswitch with automatic summer-/wintertime changeover
- 7-day program (6 switching points per day) and yearly program for holidays/special days (16 periods)
- Selection of operating mode
  with local operator unit: auto, comfort, precomfort, economy and protection or via status inputs: Comfort, precomfort, economy and protection
- Room controller combination with multiple ventilation controllers or heating controllers via the Konnex bus. Exchange information such as room temperature, operating mode and setpoints
- Display of the current operating mode (comfort, precomfort, economy and protection), including the reason for it

Setpoints

- Depending on the sequence controller: Individually adjustable heating and cooling setpoints (or maximum and minimum setpoints) for comfort and precomfort modes
- Predefined room temperature setpoint with room unit or relative setpoint adjuster (passive)
- Depending on the sequence controller: Predefined setpoint with absolute remote setpoint adjuster (active or passive)
- Room temperature setpoint with summer and/or winter compensation
- Depending on the sequence controller: Setpoint shift depending on a sensor, selectable start and end points

Universal inputs

8 universal inputs for:

- Passive or active analog input signals of the following measured values (°C, %, g/kg, kJ/kg, W/m^2, bar, mbar, m/s, Pa, and ppm, Universal 000.0, Universal 0000, pulse)
- Digital input signals (potential-free contacts)

Additional I/Os through extension modules

Additional inputs and outputs to extend functionality.
Total max. 4 extension modules per RMU7..B can be connected.
Selection from:

- max. 1 universal module RMZ785 (8 universal inputs)
- max. 2 universal modules RMZ787 (4 universal inputs and 4 relay outputs)
- max. 2 universal modules RMZ788 (4 universal inputs, 2 relay outputs and 2 analog outputs)

Data acquisition

Pulse meter (for display only, not for billing purposes).
Two meters available to acquire consumption data.
Processes pulses from gas, hot water, low-temperature hot water, chilled water, electricity meters.

- Pulse metering (Wh, kWh, MWh, kJ, MJ, GJ, ml, l, m3, heating costs units, BTU, no unit)

Trend data display
Two independent trend channels available to log measured values for a set period.
KNX bus room temperature and outside air temperatures can be logged in addition to logical device inputs.

Control functions

- Sequence controller for 3 heating sequences (reverse acting) and 2 cooling sequences (direct acting), can be used as a controller providing P, PI or PID mode, or as a differential controller
- Controller can be configured as a room/supply air temperature cascade controller with limitation of the supply air temperature
- Each sequence can be assigned modulating control (modulating output, step switch, mixed air damper, heat recovery equipment) and a pump. Up to 3 sequences can act on the same analog control (e.g. priority cooling/dehumidification)
- General limitation function (minimum / maximum with PI mode per sequence controller, either as absolute limitation (e.g. for the supply air temperature or supply air humidity), or as relative temperature limitation (e.g. maximum limitation of the room/supply air temperature differential). Limitation acts on all sequences.
  Minimum limitation for switched on cooling (example: cooling with direct expansion cooler battery) can be set to a lower setpoint
- Sequence limitation function with PI mode per sequence controller, can be defined as minimum or maximum limitation. Limitation acts on a single sequence
  (e.g. heat recovery anti-icing protection or maximum limitation of the air heating coil's return temperature)
- Lock individual sequences by outside air temperature
- Messages about deviations of setpoint/actual value per sequence controller

Switching and supervisory functions

Fans

Control and monitor supply air and extract air fan with preselected command, preselected command feedback signal and operating hours meter.

- Single-speed fan (recirculated air operation possible)
- 2-speed fan (lock the second speed per outside air temperature)
- Speed-controlled fan, including pressure or volume flow controller

Pumps

Control and supervise up to 4 simple or twin pumps

- Pump kick
- Permanent ON for low outside air temperatures
- ON after last sequence controller or per operating mode
- Plant stop for pump fault depending on the outside temperature

Heat recovery

Control heat recovery

- Maximum economy changeover
- Efficiency monitoring
- Enabling relay for heat recovery

Mixed air damper

Control mixed air damper

- Maximum economy changeover
- Minimum position
- Startup and maximum position depending on the outside air temperature
- Mixed air damper temperature control at a constant setpoint (economizer)

Linear step switch

Control of up to 3 multistage aggregates, each with 1 **linear** step switch with a maximum of 4 relay outputs 1 analog output.

Binary step switch

Control of up to 3 multistage aggregates, each with 1 **binary** step switch with a maximum of 4 relay outputs 1 analog output.

Variable step switch

Control of 2 aggregates with a **variable** step switch with 6 or 4 steps and one analog output each.

Logic functions

Two freely configurable logic function blocks are available to process multiple logically linked universal input variables.

- Configurable logic functions
- Adjustable switch-on and switch-off delay and minimum switch-on and switch-off time
- Operating switch (auto, off, on), configurable for manual control

Additional timeswitch

Additional timeswitch with 6 daily switch-on or switch-off times.

- Operating switch (auto, off, on), configurable for manual control

Demand-dependent ventilation (CO_2/VOC)

Demand-dependent ventilation (CO_2/VOC), acting on the air dampers or the variable speed/multispeed fans.

Frost protection

2-stage frost protection function (modulating/2-position) or frost protection thermostat (heating sequences delivering 100 % output, fans switched off).

- Frost protection and 3 frost protection monitors

Preheating function

Preheating function is available

Sustained mode

- Sustained heating and cooling mode during occupied or unoccupied periods

Night cooling

Night purging during unoccupied periods in the summer

Heating/cooling demand

- Output of heat and cooling demand signal (relay and DC 0..10 V)
- Collect, evaluate and forward heat and cooling demand from and via the KNX bus

Can also be configured:

- Modeling output (e.g. for demand-dependent setpoint shift of a refrigeration machine)
- Relay output (e.g. to switch-on/switch-off a refrigeration machine)
- Demand-dependent setpoint shift acting on a primary controller
- Adjustable setpoint increase for use with primary controller

Switching heating/cooling

If a 2-pipe system (heating/cooling) is used, you can switch heating/cooling via a digital or analog input, via an operating mode switch (auto, heating, cooling), by date or via the KNX bus. The heating/cooling signal can be sent to the KNX bus or issued via a relay.

Fault messages

Fault indication with red LED, acknowledgement with button.

The following options are available:

- 2 relay outputs as fault message relay
- 10 universal inputs as fault message inputs
- 4 predefined fault inputs (filter supervision, fire shutdown, "supply air smoke extraction" and "extract air smoke extraction")